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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,289

09/18/2006

Hiromoto Ohno

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

LAO, MARIALOUIA

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,289	Applicant(s) OHNO, HIROMOTO	
	Examiner LOUISA LAO	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/29/08 have been fully considered but they are not persuasive. Therefore, the rejection has been maintained.

2. However, upon further consideration of claims, as amended, a new ground(s) of rejection is made to show state of art at time of Applicants' invention. This Office Action is made FINAL, see below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The rejection of claims 1-13, as amended, is maintained under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US7138553, US'553) in view of Michaud (US5268120, US120) or Buchwald et al. (US4770714, US'714) or Ryckaert et al. (US4392000, US'000).

5. Applicants' claims (claims 1-6), as amended are drawn to a method for the purification of 1,1-dichloroethane, comprising *inter alia* bringing 1,1-dichloroethane containing a compound having a nitro group as a stabilizer into contact with zeolite having an average pore size of 3.4 to 11 angstrom and/or a carbonaceous absorbent having an average pore size of 3.4 to 11 angstrom

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in a liquid phase to reduce the stabilizer (like *inter alia* nitro methane, aminomethyphenol) to 30ppm or less. Applicants' claims (claims 7-13), as amended, are drawn to a process for the production of 1,1-difluoroethane comprising *inter alia* the steps of using said purification method; reacting the 1,1-dichloroethane reduced in said purification method with HF in the presence of a catalyst (like Cu, Mg, Cr) at reaction temperature of 100-350°C to produce 1,1-difluoroethane and separating desired product from unused materials, the latter are recycled back for re-use.

6. US`553 in column 1 lines 51-53 teaches the method of making pentafluoroethane by reacting tetrachloroethylene with HF in the presence of a fluorination catalyst (like trivalent chromium oxide, column 8 line 36) at reaction temperature of 330°C. US`553 teaches that the starting material contains a stabilizer that needs to be reduced to desirably 30ppm or less (column 6 lines 15-20), since the stabilizer (like phenol, cresol, aminomethyphenol- column 6 lines 11-12) is deleterious to the catalyst activity (column 2 line 8). US`553 teaches in column 5 lines 17-60, the zeolite and/or carbonaceous sieves, and the desired pore size and properties, used as adsorbents for the stabilizer removal. US`553 teaches in column 4 middle, the step-wise sequence by which the pentafluoroethane is made from the tetrachloroethylene. US`553 exemplifies this process in working examples in columns 11-18. US`553 teaches that the product is separated from the unreacted materials, where the latter are re-used and recycled (column 19 lines 14-15).

7. Applicants' claims differ from US`553, first a) in that US`553 teaches the process of making pentafluoroethylene from halogenated alkenes and/or halogenated alkanes, as exemplified by tetrachloroethylene; and second, b) in that US`553 teaches that said

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tetrachloroethylene contains a compound having a hydroxyl group as a stabilizer, is passed through a molecular sieve adsorbent to reduce the amount of stabilizer therein.

8. The first difference is not patentable because it would have been obvious, at the time that Applicant's invention was made, to one of ordinary skill in the art to have selected equivalent halogenated alkene and/or halogenated alkane, since halogenated alkenes and/or halogenated alkanes are within the same halogenated family and can function as precursors to make a hydrofluorocarbons (HFCs) (see column 6 lines 63-65).

9. An artisan of ordinary skill in the art would have been motivated to use a halogenated alkane, like 1,1-dichloroethane, in the process of making HFC's taught by US'553, which uses tetrachloroethylene, with a reasonable expectation of success to have precursors suitable for HFC production.

10. The second difference is not patentable because it would have been obvious, at the time that Applicant's invention was made, to one of ordinary skill in the art to have selected equivalent halogenated alkene and/or halogenated alkane, which contains a stabilizer. The instant process uses a halogenated alkane (1,1-dichloroethane), containing a compound having a nitro group as a stabilizer; while US'553 teaches a halogenated alkene (tetrachloroethylene), containing a compound having a hydroxyl group as a stabilizer. The artisan of ordinary skill in the art would have found by inference that the reduction or removal of a compound having a nitro group and/or a hydroxyl group as a stabilizer by passing through a molecular sieve adsorbent can be effectuated with an equivalent halogenated alkane (1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer. The claims would have been obvious because the substitution of one known element for another, *such as the*

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use of a nitro containing stabilizer for a hydroxyl containing stabilizer, would have yielded predictable results to one of ordinary skill in the art at the time of the invention. These nitro-containing stabilizers are taught in prior art like US`714 (col3 ll27-41) or US`000 (col3 ll23-27).

11. An artisan of ordinary skill in the art would have been motivated to use a halogenated alkane, like 1,1-dichloroethane), containing a compound having a nitro group and/or a hydroxyl group as a stabilizer in the process of purification taught by US`553, which uses tetrachloroethylene, halogenated alkane (1,1-dichloroethane), containing a compound having a hydroxyl group as a stabilizer with a reasonable expectation of success that said stabilizer will be reduced to the desired level.

All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In applying known technique to a known device (method, or product) ready for improvement to yield predictable results, the claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art.

12. No claims are allowed.

- Applicants argue that the claims, as amended, with the deletion of “hydroxyl-containing stabilizer”, are now not rendered obvious by the cited prior art, US`553.

However, the substitution of one type of stabilizer for an equivalent one, where such stabilizer exhibits the same utility, is not rendered dispositive by Applicants' arguments.

- Applicants allege that the size of the molecular sieve of the cited prior art reference “would work for the nitro-containing group with the same efficiency, since the efficacy of the molecular sieves would depend on the size of the molecule removed”.

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It follows, then from Applicants' allegations that one of ordinary skill in the art would normally engage in routines of optimization in choosing the appropriate sieve size to efficaciously remove the nitro-containing stabilizer - since the choice would be dependent on the molecule to be removed. Thus, absent a showing of criticality and unexpected beneficial results, the molecular sieve size is part of routines of optimization.

Applicants' amendment and arguments, *in toto*, are unpersuasive.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louisa Lao whose telephone number is (571)272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Louisa Lao
Examiner
Art Unit 1621

/Porfirio Nazario-Gonzalez/
Primary Examiner, Art Unit 1621